



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|                                                                                                               |  |                                                                                                                                                                                                                                                                                                                     |                                                                |
|---------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| (51) International Patent Classification <sup>5</sup> :<br>H04B 1/66, G06F 7/544, H04L 1/06                   |  | A1                                                                                                                                                                                                                                                                                                                  | (11) International Publication Number:<br>WO 94/13066          |
|                                                                                                               |  |                                                                                                                                                                                                                                                                                                                     | (43) International Publication Date:<br>9 June 1994 (09.06.94) |
| (21) International Application Number:<br>PCT/US93/11261                                                      |  | (81) Designated States: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, RO, RU, SD, SE, SK, UA, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). |                                                                |
| (22) International Filing Date:<br>18 November 1993 (18.11.93)                                                |  | Published<br>With international search report.                                                                                                                                                                                                                                                                      |                                                                |
| (30) Priority Data:<br>981,034                      24 November 1992 (24.11.92)    US                         |  |                                                                                                                                                                                                                                                                                                                     |                                                                |
| (71) Applicant: QUALCOMM INCORPORATED [US/US]; 10555 Sorrento Valley Road, San Diego, CA 92121 (US).          |  |                                                                                                                                                                                                                                                                                                                     |                                                                |
| (72) Inventor: WEAVER, Lindsay, A., Jr.; 3419 Tony Drive, San Diego, CA 92122 (US).                           |  |                                                                                                                                                                                                                                                                                                                     |                                                                |
| (74) Agent: MILLER, Russell, B.; Qualcomm Incorporated, 10555 Sorrento Valley Road, San Diego, CA 92121 (US). |  |                                                                                                                                                                                                                                                                                                                     |                                                                |

This Sheet Has Been Replaced



(54) Title: DOT PRODUCT CIRCUIT FOR MULTIPATH RECEIVERS

## (57) Abstract

A method and apparatus for computing a scalar projection of a vector onto another vector. The apparatus comprises a multiplying circuit (94) and a summing circuit (96). The multiplying circuit (94) is for multiplying a value representative of a first component of a first vector with a value representative of a first component of a second vector to provide a first intermediate value, and for multiplying a value representative of a second component of a first vector with a value representative of a second component of a second vector to provide a second intermediate value. The summing circuit (96) sums the first and second intermediate values to provide a resultant value representative of the scalar projection of the first vector onto the second vector. The apparatus may further comprise a first storing circuit (80, 82), a first selection circuit (88), a second storing circuit (84, 86) and a second selection circuit (90). The first storing circuit (80, 82) is for storing the values representative of the first and second components of the first vector, and the second storing circuit (84, 86) is for storing the values representative of the first and second components of the second vector. The selection circuits (88, 90) provides an ordered supply of these values to the multiplying circuit (94).

